

**Maintenance Technician
Electrical & Instrumentation Committee**

**O*Net Reference Code: 17-3023.02 - Calibration and Instrumentation Technicians
DOT Code: 710.281-026**

Wisconsin Apprenticeship Program:

Work Description

Maintenance Technicians safely perform mechanical and electrical duties to keep machines, equipment, or the structure of a facility in repair. They use hand and power tools to service, troubleshoot, and perform preventative and predictive maintenance functions on the following: motors, generators, air compressors and conveyors; starters and motor control centers; programmable logic controllers, computer-based controls, control panels and electrical control systems; and fluid power systems. They may also service high voltage electrical systems; align and balance new equipment; and perform repair welding, pipefitting and machining tasks; and ensure that work is in accordance with relevant codes.

Working Conditions

Maintenance Technicians work in industrial manufacturing, including paper and wood mills, food processing, printing, breweries, electronics, metal fabrication, and a variety of other industries. Electricians must be able to stand for long periods of time and work in cramped or uncomfortable positions and on ladders and lifts. They often work with hands above head, in confined spaces and in a variety of conditions and temperatures, both hot and cold. They use personal protective equipment, such as high-voltage suits and gloves, safety belts, protective glasses and/or hard hats, to avoid common hazards.

Tasks

- **Electrical Construction:** Installation/modification of conduit and wiring for power distribution and lighting; Panel building; Installation of conduit and wiring for machine and equipment controls; Layout, planning and installation of control systems including programmable controllers, drives, servo systems, etc.; Installation of communication and data systems.
- **Electrical Maintenance:** Maintain, trouble shoot, repair and/or replace the following items: power distribution and lighting systems; industrial machinery and equipment, such as: motors and transformers, electronic controls (CNC Power Distribution and lighting systems, PLC logic systems), material handling equipment (cranes, conveyors, fork trucks), welding equipment, machine tools and robotics; general plant equipment such as HVAC, compactors, automatic doors, air compressors, generators, cranes, conveyors, loading dock equipment, boilers and controls. Must also effectively use electrician's tools (hand, power, electrical and

electronic test equipment). Circuit design and drafting; schematic and/or blueprint reading. Interpret and manage documents/prints.

- **Machine and Equipment Repair, All Types:** Bearings, friction/anti-friction; belts and chains; Coupling alignment; Gear boxes; Pumps, rebuilding and overhauling, including scrape and alignment; Conveyor maintenance; exhaust fans and blowers; roll changes; Electric motor replacement; Overhead crane repair; Preventative Maintenance Inspection (visual and diagnostic; optical alignment/laser transit, fabrications (fiberglassing, sheet metal, guards/rails). Interpret and manage documents/prints
- **Hydraulics/Pneumatics:** Pumps, valves, cylinders and actuators, lubricants and coolants; Trouble shoot, repair and rebuild; compressor repair, piping, tubing and hoses; Hydraulics/pneumatics design and drafting; Schematics and/or blue print reading;
- **Safety:** proper use of personal protective equipment; safe use of hand tools, power tools, electrical and electronic test equipment; lockout-tagout procedures and other employer safety requirements to be in compliance with NFPA 70E, OSHA standards and the NEC.
- **Metallurgy:** flame cutting and heating; welding; heat treating; blacksmithing; fabrication (sheet metal, guards/rails).
- **Machine Operation:** grinders; drill press; saws; lathes; milling machines; misc. machines; alter and repair fixtures and tools; sharpening tools.

Knowledge

Computer: Knowledge of basic computer functions and applications.

Computers and Electronics: Knowledge of circuit boards, processors, chips, electronic equipment, and computer hardware and software, including applications and programming.

Designs: Knowledge of design techniques, tools, and principles used in the production of precision technical plans, blueprints and drawings

Equipment: Determining the kind of tools and equipment needed to do a job. Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.

Level of Educational Attainment: Possess high school diploma, General Equivalency Diploma (GED), or high school equivalency certificate.

Mathematics: Knowledge of arithmetic, algebra, geometry, and their applications.

Mechanical: Knowledge of tools, including their uses and maintenance.

Public Safety and Security: Knowledge of relevant equipment, high pressure safety, policies, procedures, and strategies to promote effective local, state, or national security operations for the protection of people, data, property, and institutions, including OSHA regulations, Environmental Protection Agency (EPA) regulations and Department of Transportation (DOT) regulations.

Skills

Attentive Listening: Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.

Communication: Oral and written with an emphasis on understanding verbal instructions, written sentences and paragraphs in work related documents.

Information Ordering: The ability to arrange things or actions in a certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).

Troubleshooting: Determining causes of operating errors and deciding what to do about it.

Time Management: Managing one's own time and the time of others.

Abilities

Arm-Hand Steadiness: The ability to keep your hand and arm steady while moving your arm or while holding your arm and hand in one position.

Finger Dexterity: The ability to make precisely coordinated movements of the fingers in order to manipulate or assemble objects.

Manual Dexterity: The ability to quickly move your hand, your hand together with your arm, or your two hands to grasp, manipulate, or assemble objects.

Near Vision: The ability to see details at close range (within a few feet of the observer).

Trunk Strength: The ability to use your abdominal and lower back muscles to support part of the body repeatedly or continuously over time without 'giving out' or fatiguing.

Reasoning: The ability to apply general rules to specific problems to produce answers that make sense. The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).

Problem Sensitivity: The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.

Visualization: The ability to imagine how something will look after it is moved around or when its parts are moved or rearranged.